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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/772,115      01/26/01      LEE

E      IDT-1641

EXAMINER

027158      MM91/1025  
INTEGRATED DEVICE TECHNOLOGY  
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M/S C4-25  
SANTA CLARA CA 95054

CHENG, D.

ART UNIT

PAPER NUMBER

2811  
DATE MAILED:

10/25/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**Office Action Summary**

Application No.

09/772,115

Applicant(s)

LEE ET AL.

Examiner

Douglas W Owens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of the invention of group II, claims 8-15 in Paper No. 5 is acknowledged.

***Drawings***

2. Figures 1A-1D should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
3. Applicant is required to submit a proposed drawing correction in reply to this Office action.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent No. 5,909,617 to Manning et al.

Regarding claim 8, Manning et al. teaches a semiconductor structure comprising:

- a semiconductor substrate;
- a conductive element (76) over the substrate;
- a dielectric spacer adjacent the sidewall of the conductive element; and
- a continuous silicide strap (114) over the conductive element, spacer and substrate.

Regarding claim 9, Manning et al. teaches a semiconductor structure, wherein the conductive element is a gate electrode;

Regarding claim 10, Manning et al. teaches semiconductor structure, wherein a gate dielectric is located between the gate electrode and the substrate;

Regarding claim 11, Manning et al. teaches a semiconductor structure, further comprising a source/drain region in the substrate, wherein the strap electrically contacts the source/drain region.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manning et al.

Regarding claim 12, Manning et al. does not explicitly teach a gate comprising conductively doped polysilicon. Conductively doped polysilicon is a well-known and commonly used gate electrode material. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a known material that is well suited for the intended use as a matter of design choice.

Regarding claim 13, Manning et al. does not explicitly teach a dielectric spacer comprising silicon oxide or silicon nitride. It would have been obvious to one of ordinary

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skill in the art to select silicon oxide or silicon nitride since they are known materials that are well suited for the intended use.

Regarding claim 14, Manning et al. does not teach a semiconductor device, wherein the dielectric spacer is silicon-rich. Silicon-rich oxides and nitrides are known and used in the art for several advantages, such as superior etch selectivity as compared to stoichiometric dielectric layers, as well as better protective properties. It would have been a matter of obvious design choice to incorporate a silicon-rich dielectric into the device taught by Manning et al. since the properties described above are desirable.

Regarding claim 15, Manning et al. teaches a semiconductor structure, wherein the silicide strap comprises a refractory metal silicide (Col. 7, line 53). Manning et al. does not explicitly teach a silicide strap comprising cobalt silicide. It would have been obvious to one of ordinary skill in the art to select cobalt for the refractory metal silicide, since cobalt is a refractory metal.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 703-308-6167. The examiner can normally be reached on Monday-Friday.

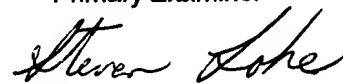
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DWO  
October 20, 2001

Steven Loke  
Primary Examiner

A handwritten signature in cursive script, appearing to read "Steven Loke", written in black ink.